Stem Cell Training Program at CSU Fullerton - A Bridge to Stem Cell Research

Grant Award Details

Stem Cell Training Program at CSU Fullerton - A Bridge to Stem Cell Research

Grant Type: Bridges

Grant Number: TB1-01181

Project Objective: Objective of the Bridges program is to provide the interns with a set of courses and internship that will train them for roles in the biotech workforce or graduate education.

Investigator:

Name:	Nilay Patel
Institution:	Cal State Univ, Fullerton
Type:	PI

Award Value: $2,764,079

Status: Closed

Grant Application Details

Application Title: Stem Cell Training Program - A Bridge to Stem Cell Research

Public Abstract: he goal of this Bridges to Stem Cell Research program is to produce students that are capable of carrying out independent research projects and can easily integrate into existing stem cell research groups. The proposed program will train 30 undergraduate students in 3 cohorts over 3 years. Selected students will participate in a rigorous curriculum at the home institution that will provide both the conceptual basis for understanding stem cells and a working knowledge of techniques in stem cell research. An established stem cell laboratory course at the home institution will provide students with 16 weeks of hands-on technical experience with stem cells. Students will also complete 6 months of independent research on a stem cell-related project in one of four research laboratories at the home institution prior to their internship at a host institution. Students will become acquainted with the ongoing research in many stem cell laboratories at the host institutions through discussions of scientific articles published from these labs. The combination of classroom work and 6 months of research experience at the home institution will facilitate rapid assimilation of the intern into ongoing projects at the host institution. These students will also take an advanced Stem Cell Techniques course at their host institution that will augment their training with advanced-level stem cell techniques. The interns will engage in full-time research for 7 months in one of the stem cell research labs at one of four host institutions. Our collaborators, three CIRM-funded university research centers and a hospital with an established stem cell research program, will involve students in independent research projects with human embryonic stem cells. The internship mentors will provide students with additional project-specific technical skills as well as the conceptual underpinnings necessary to solve problems in a particular stem cell research area. Throughout the program, students will hone their scientific communication skills as well as their technical skills to make them valued researchers in any stem cell project. The proposed program will indirectly contribute to support of stem cell research by outreach to a broader audience. In year 2, a module on stem cell research and impacts on regenerative medicine will be integrated into a large, non-major's introductory biology course. In year 3, an upper division, non-major's, online, biology course, "Stem Cells and Regenerative Medicine" will be developed to provide students with an in-depth examination of the science underlying stem cell research, its translation into regenerative medicine, and the ethical and social impacts of these activities. An annual Stem Cell Symposium highlighting research at the host institutions and accomplishments of the interns will be open to the local community to further promote public awareness of stem cell research.

Statement of Benefit to California:	The citizens of the state of California have taken an unprecedented step in initiating public support for the advancement of stem cell research. The resources made available through CIRM are creating a boom in stem cell research and positioning various institutions and companies within the state of California to become world leaders in regenerative medicine. However, this acceleration in stem cell research activities has resulted in recent college graduates being unprepared to meet the expectations of the rapidly advancing field. The CIRM Bridges to Stem Cell Research Program provides an excellent opportunity to close the gap between the training at the baccalaureate level and the expectations of stem cell researchers. Our Bridges Program proposes intensive training of selected undergraduate students over a period of 6 months prior to the start of their internship at a host institution. We predict that the comprehensive training at the home institution followed by a full-time research experience at a cutting-edge, stem cell research laboratory will allow these new graduates to be exemplar “new hires” in stem cell research and related fields. These new graduates will help to increase productivity in this area of research and close the “gap” in workforce demand for highly-trained technicians that has been expanding in the last few years. By contributing to the workforce pipeline, the CIRM Bridges Program will benefit the state of California by increasing productivity and establishing the state's research centers and industries as world-leaders in the development of useful therapies in regenerative medicine. The students on our campus represent the diversity of the state of California. Our training program allows students from diverse backgrounds to become a part of the ongoing stem cell research boom. We anticipate that some of the students from our program will pursue advanced degrees, which is of benefit to our state because these individuals will be able to bring diversity of thoughts, opinions, beliefs and problem-solving skills to the rapidly growing stem cell research enterprise. The outreach component of the proposed program will introduce a large numbers of non-biology majors to stem cell research and regenerative medicine. This component of the proposal will help to develop an informed citizenry with appropriate expectations of regenerative medicine and maintain public support for stem cell research within the state of California.